City of Albuquerque's Pollution Prevention Program Presents:

Synopsis For:

Pollution Prevention Workshop for Medical Facilities

Held April 30, 2001 at
The Indian Pueblo Cultural Center,
Albuquerque, NM
and held on May 22, 2001 at
New Mexico State University,
Las Cruces, NM

Albuquerque Pretreatment/Pollution Prevention Program
Wastewater Utility Division/Public Works Department
4201 2nd St. SW Albuquerque NM 87105
505-873-7004 www.cabq.gov/p2

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Pollution Prevention Incentives for the State (PPIS) Region VI

Presentations Made in Albuquerque

Introduction

Mr. Chuck Bowman P.E., Wastewater Utility Division Manager

Conducting a Waste Assessment -Introduction Materials In/Materials Out- Concept

Waste Volume & Toxicity - Understanding Key Relationships

Hollie Shaner RN, MSA, CGH Environmental Strategies, Inc.

Glenn McRae, CGH Environmental Strategies Inc.

Department by Department Opportunities for Waste Volume Reduction/Toxicity Reduction (details)

Hollie Shaner RN, MSA, CGH Environmental Strategies, Inc.

Glenn McRae, CGH Environmental Strategies, Inc.

Solid Waste Recycling

Mr. Will Hoffman, Office of Recycling, Albuquerque Solid Waste Department

Waste Audits - Planning Your Investigation

Hollie Shaner RN, MSA, CGH Environmental Strategies, Inc.

Glenn McRae, CGH Environmental Strategies, Inc.

Regulatory Review

Therese Martinez-Loner, City of Albuquerque, Environmental Health Dept

Holistic Approach

Resource Review - (walk through materials, collecting data, key web sites)

Hollie Shaner RN, MSA, CGH Environmental Strategies, Inc.

Glenn McRae, CGH Environmental Strategies, Inc.

Mr. Charles Bowman

Introduction/Welcome

Mr. Bowman gave a brief introduction and an overview of the day. Mr. Bowman talked about where we were and how far we have come. He shared his experiences of when he was a boy and would chase DDT trucks spraying for mosquitoes and played with broken mercury thermometers. These examples illustrate how as a society we had no idea of what kind of dangers these chemicals posed to our health. We viewed them as harmless when actually the opposite was and is true today.

Hollie Shaner, R.N

Mr. Glenn McRae

Conducting a Waste Assessment *Introduction Materials In/Materials Out- Concept

Mr. McRae and Ms. Shaner gave a brief overview of CGH Environmental. The goal of CGH is to work with institutions to reduce waste, increase worker safety and lessen hospitals overall environmental impacts. The environmental impact of medical institutions relates to all wastes and how they are handled. This was followed by the broader scope, the bell that rings for people, which is regulatory compliance, the outside hammer that drives environmental improvement.

Mr. McRae gave some background information on their books "An Ounce of Prevention" and the "Guidebook for Hospital Waste Reduction Planning and Program Implementation". The "Ounce" book, produced with the American Hospital Association (AHA) in 1992, has more to do with resource conservation. The "Guidebook" is Pollution Prevention focused. Most of the information provided is a new skill set of tools for conducting a waste assessment.

The primary goal for the workshop is to foster a new skill set, in essence, a new set of lenses, in order to go through a facility to find and deal with the waste produced. This is to help medical facilities also meet regulatory standards, specifically; the Mercury issue as well as the paper issue.

The workshop was directly related to the Memorandum of Understanding (MOU) signed by the EPA and the American Hospital Association (AHA) in 1998. The MOU encourages hospitals to reduce their waste volume by 50% and to virtually eliminate Mercury by 2010. This is a great leverage tool in getting hospital CEOs involved and making them aware of the MOU. A key issue is Persistent Bio-cumulative Toxins (PBT). The MOU includes a list of PBT's that need the most attention. The website given for the memo on the net is **www.pbt/whatsnew.htm**

Key questions about conducting waste audits are: What will you get out of it? How much waste do you produce? How are systems/programs set up? Are the waste systems meeting your expectations and is there opportunities for improvement?

The following suggestions were made:

The best place to start is in your office, block off two hours and forward your phone.

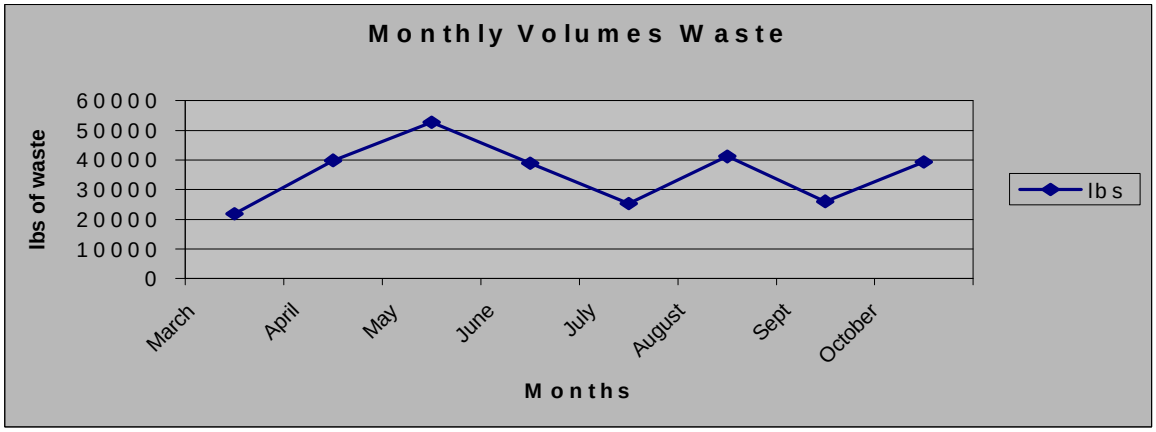
Review documentation of waste programs. Who are the vendors?

Get invoices from the vendor's, receipts, tare slips, and manifest. Do this for each waste stream—solid, biohazard, hazardous, recyclables, universal and others.

Review the documentation of waste programs. If you find the documentation is incomplete, which in most hospitals is the case, you're going to have to contact the vendors.

Determine who else at your facility might have information.

- How does the waste volume relate to activity? Obtain monthly census data and the number of surgeries/procedures for the month.
- Are there any special events, such as employee picnics, recent mergers, construction or renovations? All of these can cause spikes in the waste streams.
- An example is, if your major heart surgeon is out for a few weeks, then you are going to see a drop in wastes because no major surgeries are occurring. Note fluctuations and events.
- Create spread sheets/charts, document monthly volumes of waste, patient census and number of procedures (surgery, etc.). Expect to see a correlation between activity and waste generation. If census is up then waste is up and visa versa. Graph it. (See fig.1)



(Fig. 1)

- Ms. Shaner recommended that the units of measurement for waste should be kept in tons due to the large volumes medical facilities generate. The beauty of the graphing is you get to look at trends.

Mr. McRae went on to explain the "wander around" for waste assessment. Plan your walk through what we call the **front door-purchasing** and through the **back door-waste areas**. In between are all the departments; OR, ICU, Lab, Dialysis, ED, and Pharmacy. One thing to remember is that as materials come in they are distributed through out the facility in some very diverse channels and the waste may not come out the "back door". There are drains throughout the facility and what goes down the drain does not necessarily go away.

All medical facilities need a least a baseline waste audit or waste assessment. An audit can identify the big picture things to look for in each waste stream. Containers need to be identified, for example, in terms of identification markings, bag liner color, container style, container design, container location, and adequate number of containers and container sizes. Make sure the current system is clinically convenient. We learn more by asking people what they do as far as waste is concerned. Interview people because this is a learning experience on your part as to how and what happens to the different waste that is created.

When doing the audit you do not want to be telling people what to do. One could ask: "What do you tell people (Hospital Staff) when one is conducting a base line survey?" This a perfect opportunity to learn from the staff as to what they do and what the practices are in your hospital as far waste is concerned. An example of this is to ask nurses what they do when they break a thermometer? This gives you idea what the practice is. Does it go in the regular trash, the red bag waste or special waste for mercury? This is an opportunity for a new practice if broken thermometers are thrown in regular trash or red bagged, for example.

Understanding Hospital Waste

Understanding hospital waste data is your yardstick. Hospital waste is typically 5% hazardous, 10% biohazard and 85% solid waste. These are desirable averages. It changes a little according to locality as each state defines medical waste differently. As biohazard waste goes down, solid waste increases, for example. Establishing recycling programs offsets this increase. Well-managed hospital wastes result in multiple waste streams, solid waste, biohazard waste, hazardous waste, radioactive waste, recyclable waste, universal waste and compostable waste. Multiple waste streams often means multiple contracts with multiple vendors & information tracking. Information is often decentralized, making tracking problematic.

Waste audit data collection is the driver for convincing the administration of hospitals to make some commitment to reducing and handling their waste properly. Each of these waste streams has their own complex issues. A waste stream may be divided up differently by vendor, regulatory compliance issues, or special handling requirements.

WORKSHOP BREAK

Red Bag Waste Reduction Tips

Do You Know Where Your Red Bags Are?

Recommendations for red bag waste container placement:

- Should be intentional, not random,
- Red bags should be located only where they need to be.
- Eliminate red bag placement in hallways & other places.

The Power of One: A Lesson in Strategic Container Placement

The following example was provided: A waste container can collect 5 lbs. of waste/day (more in most cases!!) if you do the math: 5 lbs. x 7 days/wk = 35 lbs./wk 35 lbs. x 52 wk. = 1825 lbs/yr
This is almost a ton a year per container! Albuquerque hospitals are in the 35 cents per pound cost for waste hauling and disposal range. In most hospitals CGH visited in the eastern United States, medical facilities have succeeded in reducing red bag waste by 35%-50%. Waste collection routes should be on an intentional schedule based on units' waste generation and needs. We encourage people to have a route sheet to know when and how much wastes each department, (such as O.R.), produces. Red bags and red bag waste containers need to be sized appropriately. Big bags invite lots of waste.

Evaluate activity and types of wastes, and then determine most efficient bag size and type. Bag thickness is measured in millimeters (mm), having a thick bag is important especially for liquid containment. Know your high volume red bag areas. Here are a few examples:

- Surgery, this is mostly packaging and does not need to be red bagged.
- Diagnostic areas
- Dialysis (Jugs), some hospitals generate 36,000 jugs per year these do not need to be red bagged
- Laboratories
- Labor & delivery, wastes depend on when deliveries occur; no generation until the deliveries occur.

More Red Bag suggestions are:

- Avoid placing red bag containers beside hand washing sinks, at nurse's desks, on anesthesia carts, beside dialysis stations during machine set up, or in restrooms.

- If black bags are used for regular solid waste, then bags should be changed to clear bags to see if there is any red bag waste in them. This helps the hospital and the community to be certain there is no infectious waste being landfilled.

- New employee orientation should have some sort of waste management included, a small fact sheet or pamphlet. As soon as an employee is out on the floor they are creating waste.

For All Waste Streams:

- Avoid Red Bags and sharps containers containing cadmium. Ask supplier to verify that bags and containers are cadmium- free.

- Establish a used battery waste segregation program. Keep batteries out of Red Bags and Sharp Containers.

Zero Waste Zones:

- Create areas where the majority of wastes are diverted for recovery or recycling. Eliminate waste containers where possible. Some potential zero waste zones: Shipping and Receiving, Food services, Administrative areas, and the Gift Shop.

Housekeepers are very important to a successful program.

- Housekeepers need to be provided with extra education on waste management. Involve them in program enhancements and key them in to systems maintenance.

- Housekeepers reinforce waste segregation programs daily and help identify and solve waste problems. Engage them to be flexible in adjusting programs to meet changing needs.

- Housekeepers deserve respect, recognition and a safe work environment.

Nurses are essential to a program success.

- They make hundreds of disposal decisions a day. Basic nursing education does not include waste management.

- The nursing staff needs to be educated about program specifics.

Conduct Routine Waste Assessments

Establish a calendar to ensure that all areas will be visited semi-annually. Inspect for:

- ♦ Integrity of waste systems
- ♦ Level of segregation
- ♦ Labels and signage
- ♦ Container placement
- ♦ Effectiveness of collection schedules

Routine waste assessments should be monthly or more often. They can be added to "safety rounds". The Routine waste assessments monitor a program for compliance and systems integrity (Sample forms are provided in the workshop binder). Report findings to department heads. Note variations and recommendations. Staff participation in accurate segregation, effectiveness of collection schedules, adequacy of containers, and errors in disposal are all reportable findings. The included forms can help track and note all finds with the routine assessments.

You Need Department Level Buy-In

Department level, waste management efforts, can make or break a program. Feedback to waste generators is essential such as positive feedback and problems. Photo documentation of problems is a learning experience for everyone. Keep track of errors and monitor trends as they may reveal system or people problems. All departments create waste and all need to be involved. Track errors in disposal especially valuable in worker safety. How many of the tracked needle sticks in the health care industry are related to waste management? Data tracking is essential for compliance issues; i.e. finding a cytotoxic drug in trash is a worker safety and a compliance issue. Track all waste types volumes and cost.

Purchasing Decisions Matter

Purchasing decisions impact waste toxicity. Purchasing can identify products that contain mercury, PVC, heavy metals, latex, and other PBT's. Product decisions can make your hospital waste more or less toxic. Purchasing decisions impact waste volume. Purchasing single use disposables, disposable gowns, disposable drapes, disposable pillows, disposable eggcrates (mattress) and packaging all matter. Single product decisions can inflate the waste stream by tens of tons per year.

A study conducted in May 1992 by Myles Tieszen showed that removing the Operating Room disposables led to a 73% reduction in weight and a 93% reduction in overall volume. Medical facilities studies show that having disposables does not reduce infection rates, if anything infection rates have gone up.

Tips for Conducting an Area by Area Waste Assessment

There is no special order for conducting an assessment. Every department is different since they each have their own functions, supplies and waste streams.

Surgery

Contact the O.R. manager and ask to observe the "set up" and 'break down" of a surgical case. Observe when staff begin to set up a case. Look through a window or put on scrubs and a mask, enter the O.R. suite and observe. Is the room engineered' for waste reduction? Where are the sharps containers, are there clear bags for waste? Is there a clear bag on the anesthesia cart and are there red bags in the kick bucket? Note how much waste is generated before the patient ever enters the O.R. suite. Check all parts of surgery; Pre & postoperative waiting areas, Anesthesia workroom, and soiled utility areas.

Look in every nook and cranny and see if clear bags are in Scrub sink areas, Staff offices, Staff locker rooms, and Supply rooms.

You don't want to see red bags…beside scrub sinks, in store rooms, at nurses desks, in offices, on anesthesia carts, leaking or wastes piled up overflowing. Gowns, drapes and all disposables at the end of the case placed into red bags unless they are truly contaminated.

Ambulatory Surgery Areas

More and more hospitals have these and there is a company that has the Tyvek suits recycled. The info was given in the packet. Also check the following

- clear bags beside handwashing sinks
- sharps containers
- used battery collection
- confidential paper management
- if vending machines, recycling bins for containers Tyvek suit recovery & recycling
- cardboard recycling

Dialysis

Dialysis represents a big opportunity for improvement. For example gallon jugs, should not be in red bags, along with following suggestions:

The Set Up: clear bags beside handwashing sinks, clear bags available during set ups, recycle dialysis jugs (HDPE plastic), and a used battery collection container.

Special Issues: formaldehyde/formalin (listed chemical waste, check for permits), mercury containing products, high PVC use area; explore alternatives, and spill prevention: *use heavy ml thickness bags* in this areas for biohazard waste

Cardiac Catheterization Labs

Set Up Suggestions:

- used battery collection
- clear bags in office areas, control rooms and available in suites
- paper recycling
- cardboard recycling
- clear bags by handwashing sinks

Special Issues

- High PVC use area,
- explore for mercury containing products & devices,
- May need oversize sharps containers to accommodate devices.

The Catheterization Lab is similar to the O.R. Look carefully at the sharp containers, as there are odd sharps in this area? A question from the audience was "Where do you recommend the placement of sharps containers in any area?"

It was recommend having sharp containers where sharps are used. This is to be able to give the shot and put it right in the waste container. There should be some separation from the sharps container and the waste container. For example, some sharps containers are mounted right above a waste container on the wall and this could lead to a sharp in a regular waste container.

Emergency Department

Emergency rooms need clear bags as a standard; if you have the clear bags and see some blood you can always-red bag it.

***Set Up Suggestions*:** used battery container, kick buckets with red bag liners, clear bags beside handwashing sinks, clear bags available, and sharps containers: avoid floor placement.

Special Issues

- high use PVC area
- check for mercury containing devices/products
- return pharmaceuticals to pharmacy for disposal
- crash carts/clear bags

Endoscopy Area

This is area where a lot of glutaraldehyde is used and usually has esophageal dilators that may have up to a pound of mercury.

Set Up Suggestions: clear bags by hand washing stations, sharps containers and have red bags available. Recycle paper, cardboard, plastic if possible.

Special Issues

- check area for mercury containing products - esophageal dilators (bougies)
- used battery collection
- collect & recycle u-bulbs from view boxes
- Disinfection products:
  - ✓ glutaraldehyde
  - ✓ Steris System

Labor and Delivery

One of the major issues is that the biohazard waste such as the placenta, foreskins etc. go into the red bag waste where they do not belong. These waste types need to be tagged for incineration at point of generation.

Set Up Suggestions: used battery collection, make clear bags and red bags available. Have a container for pathological waste (placentas). Recycling for cardboard, metal, glass, plastic, magazines, books

Special Issues

- mercury - check for devices & giveaway thermometers to families
- high PVC use area
- identify hazardous pharmaceuticals - return to pharmacy
- confidential paper management

Critica1/intensive Care Units

Sharps containers and red bags should be set up where needed. Key issues: Make sure staff understand there is a person who will remove the red bag waste and make sure fluid collection devices are sealed properly.

Set Up Suggestions: a used battery collection, clear bags beside sinks, red bags available, sharps containers available, and careful disposal of fluid collection devices to avoid leakers.

Special Issues

- high PVC use area
- check for mercury containing devices
- confidential paper
- recycle basic materials
- Source Reduction
- Use reusable ventilator circuits, underpads, and mattresses w/built-in eggcrates.

Radiology

Silver is the big issue in this department. Most of the Albuquerque medical facilities are using Best Management Practices in the City's 5PPM Silver award program. Another hazardous metal is lead, the aprons are lead and could be something to keep on eye out for, so they can be returned or recycled. Lead aprons are a possible hazardous waste so look into recycling the lead or reverse distribution as alternatives to hazardous waste.

Set Up Suggestions:

- silver recovery from film & fixer/developer solutions
- used battery collection
- low level radioactive storage
- Capture U-bulbs from viewboxes

Source Reduction

- use cloth gowns, underpads, drapes
- explore waterless processing systems
- digital imaging

chemical-less processes

Oncology and Laboratory

Oncology and the Laboratory are complicated departments with very complex waste streams. Please refer to binder for p2 and regulatory guidance. Also you may contact the City of Albuquerque's Pollution Prevention Program for assistance and as a resource in these areas.

Central Sterile Reprocessing

Special Issues; EtO Sterilization, Glutaraldehyde use, Mercury devices, Collection of Used Batteries

Some of the P2 Opportunities; minimize use of EtO, Glutaraldehyde substitutes or neutralization, mercury phase-out, reusable sterilizing containers, and battery collection

Psychiatry

Special Waste Issues; used battery collection, confidential document management, sharps management in secure places only; no sharps boxes in patient rooms; secure disposal of patient razors modify purchasing practices.

Source Reduction; reusable linen, gowns, pillows, underpads, patient care items

Physical Therapy & Occupational Therapy

Pollution Prevention items; used battery collection, identify hazardous chemicals used in prosthesis fitting or manufacture & segregate for proper disposal. Check for mercury devices, recycle paper, cardboard, plastics, glass, magazines, books, and metals.

Patient Care Areas

Look at the Set Up; are clear bags available, is there strategic placement of red bags sharps containers at point of generation, used battery collection, and confidential paper collection.

Recycle metals, glass, plastics, paper, boxboard, and cardboard. This is a high PVC use area and check for mercury.

Nutrition Services-Zero Waste Zone

Opportunities for Source Reduction; milk in recyclable containers, use reusable dishware & cutlery, use cloth dishtowels & rags, use reusable mops and the use of cloth tablecloths.

Recycle cardboard, paper, kitchen grease, steel, aluminum, glass, plastics, food waste, and wood pallets.

Administrative Areas

What is the Set Up: is there paper recycling, cardboard recycling, toner cartridge recycling, magazine, newspaper, and book recycling.

Source reduction opportunities; interoffice mailers, double sided copies, email, mug reuse, reuse of office supplies, binders, paper clips, and used batteries.

Gift Shop

Gift shops do not create a lot of waste but you have to be aware of what your hospital is putting out to the community.

Set Up: recycle used batteries, check for mercury containing products, greeting cards, thermometers, recycle basic materials

Source Reduction; reuse packing materials, and request product in totes.

Housekeeping

This is the group that will collect used batteries and the group that will have a key to locked closets and cabinets. These people are allies to looking in every nook and cranny.

Shipping & Receiving Zero Waste Zone

Recycle pallets, recycle paper, cardboard, newspaper, magazines, collect used batteries, collect & reuse packing peanuts & materials, refurbish toner cartridges, recycle stretch wrap & films, request supply delivery in reusable totes, and use interoffice mailers.

Facilities Management

This is a big kingdom. They have different departments to do some of the following;

Fleet management

- waste oil recovery
- tire recycling
- Freon recovery

Print shop

- lubricants, inks

Electric shop

- light ballast's
- lead solder

Plumbing shop

- mercury (drain trap cleanouts)

Paint shop

- paint thinners
- aerosols
- oil based degreasers
- drain cleaners
- compressed gas tanks
- paints
- oily rags

Some Suggestions are: Collect used batteries and fluorescent light tubes, RCRA hazardous wastes assessment; evaluate chemicals on hand and disposal plans. Practice construction & demolition waste recovery. Collect and dispose of mercury switches, paint & aerosol cans, cutting oils, Freon, and pesticides.

Safety & Security

Do not ignore small innocuous departments like Safety & Security. S&S hands out a tremendous amount of PVC use area- badges, auto hangtags all have options for PVC reduction. Some other tips; used battery collection, confidential paper management and fleet management (tires, waste oil, Freon).

Waste Management Areas

We forget a big waste area is where waste leaves the facility. This area is often where occupational issues are forgotten or ignored. So we are not looking at just waste, but the infrastructure that supports us to do waste management well.

Solid waste compactor/dumpster

- spill clean up materials
- ppe
- communication device
- handwashing facilities
- eyewash station

Biohazard waste packing/storage area

- hand washing facilities
- ppe
- communication device
- spill readiness
- labels

Hazardous waste storage area

- See RCRA requirements
- signage
- communication device
- secondary containment labels

Other "Discards"

Some special topics are:

Durable goods - furniture, equipment

Technology - old computers, CRTs, printers

Old tapes, diskettes

Confidential paper wastes

Kitchen Grease

Hazardous Pharmaceuticals - Reverse Distribution

It is ALSO important to weigh & track items donated or recycled. That concluded the area by area waste assessment tips. It could take months to do a full assessment and go through every department. The binder gives checklists for each of the departments about waste assessments.

Chris Campbell / (WERC)

Mr. Campbell introduced himself as Manager of the Pollution Prevention Technology and Technical Resources Center operated through WERC which is a consortium of Engineering Departments of New Mexico State, New Mexico Tech and UNM. The center provides outreach and is a clearinghouse of information on pollution prevention issues and initiatives around the state. Free and confidential information or assistance on waste stream reduction is available.

This workshop will be duplicated in Las Cruses New Mexico on May 22 2001. Sister institutions down south are invited.

Will Hoffman , Solid Waste Dept.- City of Albuquerque

Will Hoffman gave a brief overview of the City's Solid Waste Department. He explained that there are recycling programs in place for residential pick up but unfortunately there are only paid pick ups of recyclable materials from industries. There were lists of recyclers in the private sector handed out.

Hollie Shaner, R.N CGH Environmental Strategies, Inc.

Mr. Glenn McRae CGH Environmental Strategies, Inc.

Special Topics in Health Care Environmental Management

Pollution Prevention Practices.

Purchasing **:** the power tool for pollution prevention and waste minimization

Purchasing Focused Assessment suggestions:

- Looks at product use: What's on the shelf? Reusable or disposable
- Looks at product packaging, On shelf today, in waste tomorrow!
- Environmentally Responsible Purchasing Practices

Health Care Environmental Purchasing Tool (HCEPT): is a tool that you can pass on to your purchasing mangers. This tool screens all health care products for Persistent Bioaccumulative Toxic substances (PBT's) whether it is in manufacturing, use, or disposable of a product. This web site is linked to the EPA database for PBT's. The web site is interactive and you can get reports on present products. URL for tool: http://www.ahrmm.org/info/HCEPT/index.html

The Corporate Report Card is a document that is available on the Web at www.cepnyc.org/ from the Center for Economic Priorities for about $25.00. The document rates companies on the triple bottom line and a variety of factors. One of these is the environmental grade as well as economic and investing.

Other sources for Environmentally Preferable Purchasing is www.h2e-online.org. Another site found to be helpful is the University of Massachusetts- Lowell Sustainable Hospitals Project at www.sustainablehospitals.org. At this site you can click on mercury, PVC what ever you want there is information about the alternate products with the vendors names and addresses. For example, you can enter IV bag and it will give the non-PVC bags options and companies who sell them.

Mercury

Mercury is a heavy metal, neurotoxic, and particularly harmful to a developing fetus. It is also nephrotoxic, meaning that it can cause kidney damage. Mercury vaporizes at room temperature. If you have a neo-natal ICU, these places usually use a mercury thermometer for every baby instead of using a digital from baby to baby. The cost of cleaning up a broken mercury thermometer is minimal compared to the cost of a digital thermometer.

In order to phase out mercury it is good to have an interim and a strategic plan. Mercury vacuum cleaners were discussed. Most are not maintained properly, and there is an alternative in the Lab Safety Manual, which is disposable. Mercury dropped from standing height will spill in at least a 9-foot radius. So you must be aware of the contamination level of mercury and know when to do the clean up and when to call in help."

When phasing out mercury, budget for replacement and disposal of mercury products. Taking down the wall mounted sphygmomanometer may imply the need to budget for painting or new wallpaper because the replacements do not have the same footprint. This could be a forgotten cost if there are 300 units to replace. Some areas not to forget are: gift shop, public relations, biomedical engineering, maternal child health departments, MD offices, and nursing homes. One of last items to consider is to do some community out-reach. Some ideas are, a health fair, or a program for employees and the community to bring in mercury thermometers from home in exchange for a digital thermometer or a coupon for money off the price of a digital thermometer. These kinds of programs can be implemented by partnering with local government or pharmacies to help off set cost.

PVC Products

About 25% of all healthcare products are PVC. It is not hard to tell if something is PVC: there is a symbol of chasing arrows within a number. There are two kinds of PVC in healthcare: the rigid and the flexible.

Some examples of PVC items:

- IV bags
- IV tubing
- Blood bags
- Blood tubing
- Endotracheal tubes
- Dialysis tubing
- Patient ID bracelets
- Oxygen tubing
- Feeding tubes
- Feeding bags
- Ostomy bags
- Fluid collection containers
- Mattress covers
- Porthole covers on incubators

In the binder there is a whole section on PVC, listing PVC products in hospitals and a report on exposure to DEHP. The report is from 'Health Care Without Harm'. DEHP is used to make the PVC flexible, it is a carcinogen and actually leaches out of the health care products into IV solutions, oxygen tubing's etc. The biggest concern is with new born or premature babies weighing a few pounds who are getting oxygen through PVC tubes and lying on PVC mattress that are off gassing. The most susceptible people are getting the most exposure as infants.

Do not forget the gift shop as a PVC source. The best source on PVC is www.sustainablehospitals.org, click on PVC. Hollie encouraged everyone to avoid incineration of PVC. When possible, segregate PVC products for disposal via methods other than incineration. An example is the State of Maine area, 50% of solid waste in Maine is incinerated. Remember that just diverting from red bag to solid waste does not eliminate PVC from incineration.

Used Battery Collection

Batteries are prevalent in healthcare they are in flashlights, pagers, cellphones, infusion pumps, glucose meters, defibrillators, otoscopes, and opthalmoscopes. Batteries have diverse chemistries i.e.; (nickel cadmium, lithium, mercuric oxide, zinc, lead-acid, alkaline, etc). And come in all shapes & sizes. Some batteries are hazardous wastes and must be accounted for. A house-wide collection program is best. The benefit is that distinct collection containers reduce the likelihood that batteries will be improperly disposed of in sharps containers or red bags. Cost may be about $200 for a 500-bed facility. Create a list for a milk run, know where your containers are and housekeeping can collect them or on call for collection.

Fluorescent Tube Collection

Hospitals use hundreds to thousands of bulbs per year. The end caps of the tubes are recyclable and they contain small amounts of mercury. The easiest way is to take the new ones out of the box and put the spent one in the box. If you bought a thousand then you should have recycled a thousand.

Alcohol Recovery: Laboratories

Alcohol Distillation Units allows for the collection & distillation of used alcohol. The benefits are reuse, saves $$ by reducing the need for new product, it keeps hazardous waste down, and can reduce waste generator status. Using distillation provides a viable waste management option and eliminates drain disposal of a flammable substance.

Solvent Recovery: Laboratories

Solvent Distillation Units allow for the collection & distillation of used solvents. The benefits are the majority of solvents are captured, reused, and do not become hazardous waste. This also keeps volume of hazardous waste down, and can reduce waste generator status and saves $$.

Formalin Filtration: Laboratories

Formalin Filtration Units allow for the collection & filtration of used formalin for reuse. This keeps volume of hazardous waste down, and can reduce waste generator status

Silver Recovery - Radiology

Install silver recovery units in radiology to extract silver from photographic fixer. Wastewater discharge must be less than 5 ppm (Federal Standard). Collect used X-ray film for recovery (silver extraction).

Hazardous Pharmaceuticals

This is an area that is fairly new to most people in the healthcare field. Review RCRA to identify hazardous pharmaceuticals. Coordinate a plan with the pharmacy to collect and manage expired, unused pharmaceuticals. Consider using a reverse distribution firm for expired and unused medications. In your binder you have a 'Bad Medicine' article. Share this information with your hospital pharmacist. RCRA is not usually taught in pharmaceutical programs.

Some of the pharmaceuticals on 'Crash Carts' for example 'epinephrine' appear on the P list, it is acutely hazardous. In Critical Care and Coronary Care units, Nitroglycerine is used and a P listed waste. Oncology uses cytotoxins in chemotherapy, which is hazardous. In Neurology units, EEG is used which has collodion, this is ether and alcohol. Disposal of these types of waste need some attention. Since these are wastes in small quantities they are found in red bags and these are not where you want them.

Special Topics: Waste Volume Reduction

Tyvek Garment Recycling Garment Recovery Services collects and recycle used Tyvek garments and gives a rebate on recovered garments and reimbursement for shipping charges. The toll free # 1-800-440-4130

Durable Goods: Re-routing & Reusing Suggestions:

Donate furniture to area non-profits organizations and donate unused medical supplies to local area veterinarians, animal shelters, and zoos. Donate unused supplies to charities that provide a wish list. Do not send mercury containing products or devices to developing countries, this is just complicating problems in those countries. Use caution when sending PVC plastic products to developing countries. Inquire about how waste is disposed in those countries.

Confidential Documents

As much as 90% of paper waste from hospital is confidential:

name, medical record number, address, phone number, diagnosis, lab result, test result, salary statement, genetic testing information, psychological information, social security number, religious affiliation, medication records, listed procedures, prognosis, medical history, blood type, financial information, etc.

HIPPA is a new federal regulation which requires hospitals to ensure patient privacy and information security. This includes hard copy document disposal not just medical records, but all careplans, med cardexes, lab slips, message pad notes, doctors' notes, menus, and requisitions. But what about recycling all that paper? A secure a vendor is needed that will provide a certificate of destruction for every load of waste paper collected. This needs to be a bonded hauler that provides shredding services & recycle shredded materials. Provide lock boxes, internally, to collect confidential paper in a secure fashion. The vendor must be able to provide certificates stating confidential documents were disposed of properly.

To Shred or Not to Shred? The benefits of shredding include privacy, and destruction can be witnessed on site. The downside is increased paper volume by 20 fold. The increased volume translates to increased labor for collection and disposal, and increased volume creates increased space needs for storage. Also, shredding adds particulate to the air, compromising indoor air quality.

Durable Goods Re-routing & Reusing

For donations of equipment, medications and materials to international charities please check the web site: http://www.drugdonations.org/eng/, for donation guidelines. Protocols for collection and tracking of recovered healthcare materials for donation see http://www.remedyinc.org/.

Toner Cartridge Recovery

Toner cartridges can be collected for refurbishing. Some manufacturers provide mail-back box and label and some companies offer rebates. Track the number of cartridges sent in for recycling and include waste diversion & recycling data.

Kitchen Grease

Can be recovered for rendering and recycled into soap, make-up, dog food additive, and yellow tallow. A good conversion for data tracking is 1 gallon (kitchen grease)= 12 lbs.

Food Waste, Leaf & Yard Waste

Consider composting organic material. Compost can be reused to landscape hospital grounds. Consider diverting food prep wastes & outdated foodstuffs to area pig farmers. Specify to landscape and maintenance contractors, that leaf, yard wastes, and grass clippings should be used for compost.

Therese Martinez-Loner,

City of Albuquerque, Environmental Health

Regulatory Review

Three documents were passed out to the audience. " Hazardous Waste Management Hand book", " The Environmental Fact Sheet", and " The Universal Waste Rule".

Hazardous wastes regulations under RCRA rules have been distilled into the "Hazardous Waste Management Handbook". The state of NM charges fees for generators. Fees are collected every August. It is your responsibility to keep up with the changing regulations. How do you know what kind of generator you are? By record-keeping. A focus was provided on the Small Quantity Generators. Large Quantity Generator usually have the staffing and/or outside consults to take care of their reporting and waste management. There are some things as a Small Quantity Generator you count and some you would not. A 'Continuous Property', is defined as an all-encompassing area, such as Sandia National Labs. They have no public streets or right of ways separating them. If you were for example, a lab that has administrative offices and a laboratory separated by a public street you would not be a continuous property. The lab would have its own generator number, and the lab would have to keep their own records. This distinct entity would keep the EPA number always according to CERCLA. If there was a superfund site it could be tracked to who was responsible. As a Small Quantity Generator you should not exceed 220 lbs. of hazardous waste or 1 kg of acute waste per month.

Record keeping is the most difficult part of hazardous waste management. How do you know if you are conditionally exempt? By record keeping, A guidebook was provided with all city and county agencies that can help with hazardous waste management

The Universal Waste Rule

The rule will be adopted by the State for recycling of batteries, florescent lights, and mercury thermostats. Batteries can be taken at Batteries Plus at 4000 San Mateo Blvd NE or Corrales Shopping Center, but your vendors may be able to do an exchange program. The City of Albuquerque has this type of plan with all the cell phone batteries.

(Note: The New Mexico State Hazardous Waste Bureau informed individual facilities about the handling of fluorescent lightbulbs. The EPA added fluorescent lightbulbs to the Universal waste rule. The Resource Conservation and Recovery act (RCRA), 2000 edition, addresses this issue in Chapter 12, 40 CFR Part 273; Universal Waste Management Standards. NM HWB has adopted by reference the federal regulations dated up to June of 2000. In an effort to encourage pollution prevention and recycling the New Mexico Hazardous Waste Bureau is allowing facilities to handle fluorescent lightbulbs as universal waste, in accordance with 40 CFR 273.)

Therese wrapped up by referencing the handouts and the city's web site www.cabq.gov. She encouraged all to use the resources of the City, County and State.

Hollie Shaner, R.N CGH Environmental Strategies, Inc.

Mr. Glenn McRae CGH Environmental Strategies, Inc.

Holistic Approach

Resource Review - (walk through materials, collecting data, key web sites)

A blank sheet of paper was handed out. Glenn promised this is the last piece of paper that we would get today. We would like people to pause before going home today; think about the things learned today. Think of what today offered, was it old news, new news, and what information helped or could help in terms of source reduction? What or who will need to be contacted tomorrow or in the near future to get your needs accomplished. This exercise is to help reflect and keep from getting back to the office and putting your materials aside and getting caught up in your day-to-day operations. We need to put into action the things learned here to today. On your paper prioritize what your facility needs first and what resources you will need. Follow-up visits were made to volunteer hospitals. Hollie and Glenn thanked everyone for their participation.